

THAT WHICH IS CLAIMED:

1. A method for resolving data collision in a network shared by a plurality of users, the method comprising:

calculating a first back-off window based at least in part on an estimate of a number of users on the network;

sending the first back-off window to a plurality of users of the network,

calculating a second back-off window based at least in part on a number of collisions that occur within the first back-off window; and

sending the second back-off window to one or more of the plurality of users of the network.

2. The method of claim 1, further comprising calculating subsequent back-off windows based at least in part on the number of collisions that occurred within a prior back-off window and sending the subsequent back-off windows to one or more of the plurality of users of the network.

3. The method of claim 1, further comprising initiating a cycle with a limited number of users that can compete for network resources during the cycle.

4. The method of claim 3, wherein calculating the second back-off window comprises calculating the second back-off window in the same cycle as the step of calculating the first back-off window.

5. The method of claim 3, further comprising ending the cycle when there are no collisions within a back-off window.

6. The method of claim 3, further comprising initiating a second cycle subsequent to the first cycle with a limited number of users that can compete for network resources during the second cycle.

7. The method of claim 3, wherein initiating a cycle with a limited number of users comprises initiating a cycle based on a number of users that successfully reserved network resources during a prior cycle.

8. The method of claim 1, wherein the step of calculating the second back-off window based at least in part on the number of collisions that occurred within the first back-off window comprises calculating the second back-off window based on a product of the number of collisions that occurred within the first back-off window and an average of the number of users involved in a collision.

9. The method of claim 1, wherein the step of calculating the second back-off window based at least in part on the number of collisions that occurred within the first back-off window comprises calculating the second back-off window based on the product of the number of collisions that occurred within the first back-off window and a value of approximately 2.3922.

10. A method for resolving data collision in a network shared by a plurality of users, the method comprising:

sending a first back-off window to a plurality of users of the network;

calculating a second back-off window based at least in part on a number of users that collided while attempting to reserve network resources during the first back-off window;

sending the second back-off window to one or more of the plurality of users of the network; and

limiting network reservation attempts in the second back-off window to users that collided while attempting to reserve network resources during the first back-off window.

11. The method of claim 10, further comprising calculating subsequent back-off windows based on a number of users that collided in a prior back-off window and sending the subsequent back-off windows to one or more of the plurality of users of the network.

12. The method of claim 11, further comprising limiting network reservation attempts in the subsequent back-off windows to the users that collided while attempting to reserve network resources during a prior back-off window.

13. The method of claim 10, further comprising initiating a first cycle with a limited number of users that can compete for network resources during the cycle.

14. The method of claim 13, further comprising initiating a second cycle when no collisions occurred during a back-off window in the first cycle.

15. The method of claim 10, wherein the step of calculating the second back-off window based at least in part on the number of users that collided while attempting to reserve network resources during the first back-off window comprises calculating the second back-off window based on a product of the number of collisions that occurred within the first back-off window and an average of the number of users involved in a collision.

16. The method of claim 10, wherein the step of calculating the second back-off window based at least in part on the number of users that collided while attempting to reserve network resources during the first back-off window comprises calculating the second back-off window based on a product of the number of collisions that occurred within the first back-off window and a value of approximately between 2.3922.

17. A system for resolving data collisions in a shared network, comprising:
a plurality of remote devices; and

an access point in communication with the plurality of remote devices, wherein the access point further comprises:

a switch for communicating with the plurality of remote devices;

a transceiver for sending information to and receiving information from the plurality of remote devices; and

a collision resolution device communicably coupled to the transceiver and the switch, wherein the collision resolution device sends an initial back-off window to the plurality of remote devices;

wherein the collision resolution device calculates and sends a subsequent back-off window in response to a number of collisions in the initial back-off window; and

wherein the collision resolution device limits the remote devices that can compete for network resources in the subsequent back-off window to remote devices that unsuccessfully attempted to reserve network resources in the initial back-off window.

18. The system of claim 17, wherein the size of the initial back-off window is based on an estimate of remote devices competing for network resources.

19. The system of claim 17, wherein the subsequent back-off window is calculated based on a product of the number of collisions that occurred within the initial back-off window and an average of the number of remote devices involved in a collision.

20. The system of claim 17, wherein the subsequent back-off window is calculated based at least in part on a product of the number of collisions that occurred within the initial back-off window and a value of approximately between 2 and 3.